

# W5YI

Nation's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reproduced providing credit is given to The W5YI Report.

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Vol. 15, Issue #2

\$1.50

PUBLISHED TWICE A MONTH

January 15, 1993

## Cable TV Industry to Fight TVI with Hardware Solutions

*"Clearly, the solution to this onerous kind of electromagnetic interference is to better shield and isolate the tuners in TVs and VCRs." - the cable industry*

With the exciting growth in the Amateur Radio Service chronicled in these pages -- about 48,000 new hams expected in 1992 -- comes increased exposure of home electronic equipment to amateur transmissions. Radio Frequency interference (RFI) and Television Interference (TVI) immunity is of interest to most every ham, as amateur stations are typically located in residential areas where TV sets abound.

TVI disputes between amateurs and neighbors can become acrimonious, protracted and expensive, even when the amateur is properly licensed and follows FCC rules to the letter. Some neighbors have even gone so far as to file petitions with the FCC to deny amateur privileges, arguing that amateur communication has been supplanted by satellites! The FCC is placed in a difficult situation when it must balance support for its licensees with neighbors' desires to enjoy consumer products.

The good news we report is that cable TV companies are now pursuing a substantial effort to study causes of TVI and recommend hardware solutions.

They are using an 'opening' created by the passage of the new cable TV legislation, which requires problems of cable, TV and VCR compatibility to be cleared up. The FCC has the apparent responsibility under the new law to see that this

happens.

FCC staff have told us that to save money and get a handle on growing interference problems, the FCC is reducing its individualized investigations of interference complaints and will focus on manufacturers' responsibilities to build products that can function properly in today's busy RF environment. Among the TV set improvements suggested by amateurs for decades is better shielding and immunity to direct pickup interference.

According to Cable Television Laboratories (CableLabs), a central research house for the cable industry, direct pickup (DPU) is one of the "most damaging" problems between the cable TV system and the TV or VCR connected to it in the home. "DPU occurs for several reasons," CableLabs said in a press release. "One cause is when a tuner's shielding is inadequate to repel unwanted signals from entering a television set or VCR. These signals can be coming from a broadcast source into a set that is getting its television signal from cable service. These signals can also arise from pagers, business radios and other similar devices. This creates interference, or ghosts, in the picture." In some cases, the problems do not occur when the same TV is used without cable. "As a result, consumers frequently



and intuitively -- but incorrectly -- blame the cable service as the source of the problem," CableLabs president Richard Green said.

## ***Set-top converter boxes: Incomplete solution***

In the past, cable companies have used set-top converter boxes as a solution to problems such as inadequate tuning and tuner overload. The boxes contain better tuners and shielding than those built into TV sets. This worked to control DPU and prevent unwanted signals from getting into the TV. Apparently, however, consumers complained to cable companies that the converter boxes interfere with operation of other features built into their TVs and VCRs.

Manufacturers started shipping TVs and VCRs labeled as "cable compatible". But they "still have not improved the other shortfalls in the equipment," CableLabs said. Cable companies tried to fix their interface hardware so as to eliminate the need for the set-top converters. But this plan was "thwarted" by DPU interference and it was 'back to the drawing board' to address the problem in the TVs and VCRs themselves.

CableLabs spokesman Mike Schwartz told us that his organization first contracted with Stern Telecommunications to study the extent of TVI. "We attempted in our study to do computer modeling and evaluation of the electromagnetic environment in which TV sets reside, so we could get a handle on what percentage of TVs might reside in areas that have high potential for interference. We are now taking the second step to actually get up a test plan with a respected lab."

Claude Baggett, the lab's director of consumer electronic systems, said "We now must learn how susceptible TVs and VCRs are to the interfering signals at field strengths as defined in the Stern study. The first step in that process is to define, in an absolute a manner as possible, all of the test facilities, procedures and methodologies required to test consumer hardware for its susceptibility to DPU types of interference."

## ***Request for proposals issued***

The laboratory is now seeking proposals from test labs and university researchers to contract for the hardware study. The Request for Proposals and Information (RFP/I) reads, "Clearly, the solution to this onerous kind of electromagnetic interference is to better shield and isolate the tuners in TVs and VCRs, as is done in cable television converter units.

"In the past the consumer manufacturers have not adopted this solution, claiming that they had no data with which to size the problem, and thus they had no guideline as to how much increased shielding and

isolation is sufficient for a reasonably complete solution to the problem, perhaps in the 98% range."

What will happen to the research results? Mike Schwartz said that his industry will try to work with consumer product manufacturers and the FCC to implement the product improvements. The new cable law requires performance standards for TVs and VCRs to improve their compatibility with cable, he explained, and his organization views TVI immunity as an important part of cable compatibility.

● *We had a rather lengthy telephone conversation with the FCC last week where we covered the current status of each of the rule making proceedings involving amateur radio. Here is a run down of:*

## **WHERE THINGS STAND!**

(Item No. 1.) FO Docket 92-206 (Aug. 21, 1992 NPRM)  
**Privatizing Commercial Radio Operator examinations**  
(FO stands for Field Operations Bureau, rather than PR; Private Radio.)

Because of budgetary constraints, the FCC asked for and received legislation authorizing it to delegate the examination of commercial radio operators to non-government organizations. Currently, there are eight types of commercial radio licenses and two types of endorsements. The newest class of license is the *Global Maritime Distress and Safety System* Radio Operator's license.

Actually this proceeding started in the Field Operations Bureau (FOB) since it was they who administered the examinations. Last fall, the responsibility for Commercial Radio Operator examinations was transferred to the Private Radio Bureau and PRB has now assumed control of the NPRM. The Notice of Proposed Rulemaking asks the public for their views on how such a private sector program should be structured.

The comments and reply comments have now been analyzed by PRB. According to the so-called Sunshine Agenda, this item is scheduled for final Commission action on January 14; too late for our deadline. A Report & Order is anticipated adopting the NPRM and we will have an in-depth report on this matter in our next issue.

By the way, commercial radio operator directives are covered in Part 13 of the Commission's Rules. These rules are available from the Government Printing Office. (Order: Title 47 CFR Part 0-19. We understand the October 1992 updated version will be available in March. Cost is \$22.00. Telephoned credit card orders go to 202/783-3238.)



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(Item No. 2) PR Docket 92-136 (June 18, 1992 NPRM)  
Permissible and prohibited amateur communications

This administrative work on this proceeding is being handled by Bill Cross, Communications Analyst in the FCC's Personal Radio Branch/Washington, DC. This rulemaking has a long and interesting history. The FCC had been talking with the ARRL on the matter of more liberal amateur communications as far back as 1990. Amateurs have long wanted to take part more fully in such functions as the Iditarod Dog Sled Race in Alaska, the New York Marathon, the Rose Bowl Parade ...and many, many others.

All of these events have a pecuniary angle and as such, communications participation - especially those involving logistics - by amateur radio operators is prohibited. And ham gathering "talk-ins" over amateur radio are questionable if there is an admission charge. Even routine assistance to local, state and federal governments (such as public safety organizations) is controversial since they have their own authorized frequencies. See §97.113(a).

At the ARRL National Convention in August 1991, new amateur communications parameters were first publicly suggested during remarks made by FCC bureau chief, Ralph Haller. The FCC suggested three levels of communications: Priority (emergency), Primary (regular) and Secondary (non-amateur) communications. Haller asked the ARRL for their recommendations on the matter. The League views came in the form of a lengthy 14-page letter which was submitted almost exactly a year ago. The FCC treated the letter as a petition for rulemaking.

The League agreed that the no-business communications rule indeed should indeed be relaxed. They especially wanted a mechanism which would permit wider participation by amateurs in public service events. In June, the FCC issued a *Notice of Proposed Rulemaking* which substantially followed the League's informal proposal. But other requests not asked for by the ARRL which would permit amateurs to transact personal and logistical business on the ham bands were also included in the NPRM. The comment period closed last fall, reply comments last month.

It is anticipated that the FCC will now issue a *Report and Order* sometime this Spring adopting relaxed amateur communications guidelines. The big question is, how far will they go? It has the potential to be a "block-buster" of a decision! Hopefully the matter will be resolved in time for "airing" at the **Dayton Ham-Vention** where Washington FCC officials usually conduct a forum and make presentations on new rulemaking. Hamvention takes place the last weekend in April. This one could be far-reaching! Nothing is as basic to ham operation as communications content conditions.

(Item No. 3) PR Docket 92-154 (July 13, 1992 NPRM)

Folding Novice testing into the VEC System

This one is due out "late Spring ...in the April, May time frame we are told. In the interest of efficiency, this proceeding seeks to consolidate the two existing ham radio operator license testing programs into one. All operator license examinations, except for the Novice Class, are administered in the VEC System. Questions for all written examinations - including the Novice Element 2 - are developed and revised by the VECs Question Pool Committee. VEC coordination provides a procedure for circulating needed examination information to the VE team. The VEC System is also perceived as a more credible testing program. A *Report and Order* adopting the NPRM is expected.

(Item No. 4) PR Docket 92-167 (Aug. 6, 1992 NPRM)  
Licensing of visiting foreign amateurs

Comments are still being reviewed on this one and final Commission action is not anticipated until June or July. This rulemaking suggests a novel licensing scheme whereby all foreign licensed amateur radio operators temporarily visiting the United States would be able to operate their amateur radios for up to 60 days.

It would work like this: VE teams would determine the extent of a foreign hams operating privileges and determine how this most closely corresponds with U.S. privileges. A 20 question multiple-choice test on FCC rules and regulations (pass rate: 90%) would then be administered to the visiting foreign amateur. A VE team issued CSCE (*Certificate of Successful Completion of Examination*) would validate immediate 60 day operation.

The VECs would keep track of these authorizations by maintaining a database of all 60-day temporary operating permits. Some of the comments indicate that VE teams might have a difficult time deciphering the operating privileges granted by a foreign ham ticket most of which are in an unfamiliar language. On the other hand, hundreds of reciprocal operating permits are currently issued to foreign amateurs annually by the Commission.

The FCC in Gettysburg also has the same problem but manages to issue the permit anyway. Even if a foreign license can not be fully understood, the FCC has a Part 97 regulation that covers the situation. The rules governing the issuance of a reciprocal permit (see §97.107) state that the "...operating terms and conditions [of a reciprocal permit are those] issued by the alien's government ...not to exceed the privileges of an Amateur Extra Class operator license."

(Item No. 5) PR Docket 92-289 (Dec. 11, 1992 NPRM)  
VHF/UHF Rule changes (primarily affecting Novices)

This item is being handled by Monty DePont, attorney in the FCC's Personal Radio Branch. He told



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us that the NPRM was only issued last month and comments don't close until February 23, 1993. He said it will be "summer" before final action takes place on this matter.

This item seeks to create a small sub-band (222.0-222.15 MHz) for weak signal and experimental communications, extend Novice operation to the entire 222-225 MHz band and to allow Novices to be control operators of repeaters at 222 and 1270 MHz. Depending on the comments, a *Report and Order* adopting the matter is anticipated.

## *Status of other proceedings...*

The FCC also reports that a;

- (1.) "T.W. Colby" has requested a Special Temporary Authority (STA) to operate HF packet.
- (2.) William C. Wells, WA8HSU, has petitioned the FCC to reduce the number of amateur radio operator classes to three; Novice, Technician and General. He argues, "The Amateur Radio Service of the United States has what is by far the world's most complex license structure. Almost everybody agrees that the present license structure is overly complex and this petition provides the maximum reasonable simplification of the license structure and licensing process."
- (3.) "K. E. Closs" requests authority for Advanced Class VE's to give more exams than is now permitted. He wants Advanced VE's to administer both Advanced and General Class license examinations.
- (4.) "A. D. Gagnon" is interested in getting a waiver of the AM power limits.
- (5.) Bill Welch, W6DDB requests additional privileges for Novices at 30 meters. That petition has been accepted for comment and assigned File No. RM-8093.
- (6.) The FCC is also awaiting input from the League on semi-automatic control on HF packet. This information is believed forthcoming after the ARRL's January Board of Directors meeting.
- (7.) The FCC has under consideration a request from the ARRL to issue club and military amateur call signs. The Commission has not yet acted on this request. We understand there are other non-profit organizations that also wish to issue amateur call signs.
- (8.) A blind handicapped amateur (a Mr. Leonidas R. Moten of Charleston, WV) has filed a discrimination complaint with the FCC because he was denied participation as a VE at a West Virginia amateur examination session. Moten contends his civil rights were violated. Even though Moten was accredited as a VE, the W5YI-VE team felt he could not "...observe the examinee throughout the entire examination session" as required by Section §97.509(a). W5YI-VEC policy is to accredit otherwise qualified handicapped amateurs and allow the VE team to decide whether or not the individual is competent based on the handicap.

## TWO MORE ASTRONAUTS PASS HAM RADIO EXAMS

Two more astronauts have passed No-Code Technician ham radio exams at W5YI-VEC coordinated test sessions. They are awaiting receipt of amateur operator licenses. Both are scheduled to "fly" aboard space shuttle flights launching during the next two months.

**Charles J. Precourt**, 37, is a transplanted New Englander (Hudson, MA) now residing Pasadena, Texas. He is an Air Force officer (believe a Lt. Colonel, although the biographical sketch from NASA shows him to be a Major) and a previous Edwards AFB test pilot.

Precourt became an astronaut in 1991 and is scheduled to be aboard STS-55 and the space shuttle Columbia on February 25th as a Mission specialist. Also on board STS-55 will be Commander **Steve Nagel, N5RAW** (46, Canton, IL, USAF) and Payload Commander **Jerry Ross, N5SCW** (44, Crown Point, IN). Both Nagel and Ross are Air Force Colonels, test pilots and veterans of previous space shuttle missions.

STS-56 has a scheduled March 11 launch date, but we understand this date has slipped a little. In any event, this flight will be the first shuttle mission where every astronaut on board is an FCC licensed radio amateur. STS-56's Commander **Ken Cameron, General Class KB5AWP** (43, Houston, TX) lists ham radio as one of his main hobbies! Payload Commander is **Ken Cockerell KB5UAH** (42, Austin, TX). Mission Specialists are: **Ellen Ochoa KB5TZZ** (34, La-Mesa, CA with a Ph.D in Electrical Engineering from Stanford University is also a symphonic classical flutist) and **Mike Foale KB5UAC** (36, Ph.D Astrophysics, Cambridge, England). The STS-56 Shuttle "Discovery" pilot: **Steve Oswald** (41, from Houston, TX but originally from Bellingham, WA) has passed his Technician requirements and is awaiting a call sign which (hopefully) he will have prior to the March liftoff.

Both shuttle missions carry scientific cargo bay payloads. STS-55 (9-days) will carry the Spacelab D2; STS-56 (8-days), the Atlas-2 Atmospheric Laboratory.

The secondary payload on both missions is the **SAREX-II, Shuttle Amateur Radio Experiment**. All eight ham astronauts are expected to contact ground-based amateur radio operators around the world from the shuttle using a battery-powered low-power hand-held transceiver and a window-mounted antenna. SAREX operations will be conducted during mission periods when crew members are not scheduled for orbiter and payload activities.

SAREX is a joint effort of NASA, the American Radio Relay League and the Amateur Radio Satellite Corporation. SAREX also provides an educational opportunity for schools all over the globe to learn about space first hand by speaking directly to on-orbit shuttle crew members using VHF-FM voice ham radio. (Information from NASA, Johnson Space Center, Houston, TX)



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## NOVEMBER AMATEUR LICENSING STATISTICS

November	1989	1990	1991	1992
New Amateurs:				
New Novices	1520	1498	813	454
New Tech's	209	182	1815	1054
Total New:	1769	1746	2687	1525
Upgrading:				
Novices	868	1016	491	216
Technicians	310	633	404	*284
Generals	244	494	241	170
Advanced	151	264	209	122
Total:	1573	2407	1345	792

### Renewals:

Total Renew:	151	28	80	35
Novices	19	4	7	1

### Purged:

Total Dropped:	1020	1300	19	4
Novices	371	519	4	1

### Census:

Indiv. Oper.	468447	496947	539200	584350
Change/Year	+30409	+28500	+42253	+45150

### Individual Operators by Class: (and % of total)

Extra	Advan.	General	Technic.	Novice	Total:
November 1989					
50070	101904	116944	114507	85022	468447
10.7%	21.8%	25.0%	24.4%	18.1%	100.0%

### November 1990

53520	105102	119552	126543	92230	496947
10.8%	21.2%	24.0%	25.5%	18.5%	100.0%

### November 1991

57174	107485	122462	155368	96711	539200
10.6%	19.9%	22.7%	28.8%	18.0%	100.0%

### November 1992

60986	109769	124924	189721	98950	584350
10.4%	18.8%	21.4%	32.5%	16.9%	100.0%

### Club/

RACES &	(1989)	(1990)	(1991)	(1992)
Military:	2462	2434	2431	2431

Total Active:	470909	499381	541631	586781
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% Increase	+7.0%	+6.0%	+8.5%	+9.0%
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(\* = Does not include Technicians upgrading to Tech Plus)

## NUMBER OF AMATEURS BY CALL SIGN GROUP:

Group	Extra	Advan.	General	Technic.	Novice	Total
A	34837	684	249	7	0	35777
B	3732	28481	54	6	1	32274
C	14011	43821	67173	85465	48	210518
D	8160	36665	57342	104180	98899	305246
Other	246	118	106	63	2	535
Total	60986	109769	124924	189721	98950	584350

[Group "A"=2X1 & 2X2; "B"=2X2; "C"=1X3 "D"=2X3 format.]

[Source: FCC Licensing Facility, Gettysburg, PA]

## AMATEUR RADIO CALL SIGNS

...issued as of the first of December 1992:

Radio District	Gp.*A* Extra	Gp.*B* Advan.	Gp.*C* Tech/Gen	Gp.*D* Novice
0 (*)	AA0KZ	KG0CI	N0UXC	KB0KVV
1 (*)	AA1EW	KD1LZ	N1NZA	KB1ANK
2 (*)	AA2MB	KF2MC	N2TFP	KB2PRF
3 (*)	AA3CU	KE3GE	N3NVF	KB3ALG
4 (*)	AC4YL	KQ4KY	(***)	KD4VFC
5 (*)	AB5JS	KJ5HK	(***)	KB5WQW
6 (*)	AB6PR	KN6EY	(***)	KD6QIP
7 (*)	AA7SX	KI7IV	(***)	KB7RLT
8 (*)	AA8JP	KF8YK	N8WMC	KB8OLY
9 (*)	AA9FP	KF9MQ	N9RSZ	KB9IGV
N.Mariana Is.	AH0Q	AH0AL	KH0AZ	WH0AAT
Guam	NH2L	AH2CR	KH2GL	WH2AND
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii	(**)	AH6MH	WH6KD	WH6CQB
Kure Is.			KH7AA	
Amer. Samoa	AH8G	AH8AE	KH8AI	WH8ABB
Wake W.Peale	AH9C	AH9AD	KH9AE	WH9AAI
Alaska	(**)	AL7ON	WL7HL	WL7CGJ
Virgin Is.	NP2V	KP2CA	NP2GB	WP2AHU
Puerto Rico	(**)	KP4UO	(***)	WP4LQC

**CALL SIGN WATCH:** \*=All 2-by-1 "W" prefixed call signs have been assigned in all radio districts. Group "A" 2-by-2 format call signs from the AA-AK block are now being assigned.

\*\*=All Group A (2-by-1) format call signs have been assigned in Hawaii, Alaska and Puerto Rico. Group "B" (2-by-2) format call signs are next assigned

\*\*\*=Group "C" (1-by-3) call signs have now run out in the 4th, 5th, 6th, 7th and Puerto Rico call districts. Group "D" (2-by-3 format) call signs when all Group "C" have been assigned.

Upgrading Novices holding a 2-by-3 format call sign in the 4th, 5th, 6th, 7th and Puerto Rico call areas will no longer be able to request a Group "C" call and will be automatically assigned another more recent 2-by-3 format call sign if they do!

## HAM RADIO LICENSING OVER LAST 5 YEARS

On the next page you will find a listing of the growth in number of individual amateur radio stations/operators in the United States over the last five years.

Note that while the service grew by 35%, the number of Technician Class amateurs doubled. Also, the state of Utah leads the nation with a 65% growth rate - nearly double the national average!

[Source: FCC, Gettysburg, Pennsylvania]



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## AMATEUR SERVICE GROWTH REPORT - NOVEMBER 1987 VS. NOVEMBER 1992

STATE	EXTRA		ADVANCED		GENERAL		TECHNICIAN		NOVICE		TOTAL		INC. %
	1987	1992	1987	1992	1987	1992	1987	1992	1987	1992	1987	1992	
Alabama	654	909	1378	1596	1556	1703	1435	3225	1006	1039	6029	8472	41%
Alaska	232	291	477	522	540	631	352	689	376	463	1977	2596	31%
Arizona	830	1172	1995	2343	2134	2438	1941	4123	1116	1260	8016	11336	41%
Arkansas	352	545	800	941	896	980	698	1855	559	613	3305	4934	49%
California	5593	7542	14140	15602	14835	16395	14742	31411	10912	16795	60222	87745	46%
Colorado	798	1040	1681	1942	1923	2102	1414	2933	1155	1351	6971	9368	34%
Connecticut	772	1018	1420	1523	1825	1919	1036	2180	1457	1714	6510	8354	28%
Delaware	123	181	227	229	251	279	228	407	183	214	1012	1310	29%
Dist. of Col.	68	79	98	96	115	128	47	98	79	81	407	482	18%
Florida	2434	3601	6196	7238	7291	8526	5305	10029	5155	6775	26381	36169	37%
Georgia	886	1269	1964	23230	2190	2463	1850	4107	1304	1526	8194	11695	43%
Hawaii	224	291	477	507	542	577	446	841	516	688	2205	2904	32%
Idaho	200	264	443	529	622	678	364	947	376	413	2005	2831	41%
Illinois	1778	2316	3808	4038	4743	4847	3864	6820	3322	3639	17515	21660	24%
Indiana	916	1293	2146	2318	2546	2719	2393	4579	1962	2141	9963	13050	31%
Iowa	479	639	1284	1408	1466	1495	831	1617	995	1075	5055	6234	23%
Kansas	451	637	1036	1120	1432	1519	805	1862	978	1049	4702	6187	32%
Kentucky	435	685	963	1124	1267	1378	1080	2375	997	1236	4742	6798	43%
Louisiana	540	737	1193	1316	1340	1406	985	2058	833	938	4891	6455	32%
Maine	269	415	537	652	869	996	383	1026	492	591	2550	3680	44%
Maryland	1022	1355	2054	2189	2013	2193	1448	3048	1371	1544	7908	10329	31%
Mass.	1345	1821	2472	2715	3133	3293	2367	4290	1833	2307	11150	14426	29%
Michigan	1393	1895	3240	3482	3979	4195	2994	5906	2660	2724	14266	18202	28%
Minnesota	745	1009	1745	1912	2109	2302	1266	2646	1291	1353	7156	9222	29%
Mississippi	273	398	650	770	768	825	530	1305	447	544	2668	3842	44%
Missouri	829	1181	1896	2138	2381	2555	1591	3214	1530	1527	8227	10615	29%
Montana	181	267	360	397	524	572	210	616	308	369	1583	2221	40%
Nebraska	233	334	720	761	955	993	506	947	483	503	2897	3538	22%
Nevada	216	321	467	588	617	757	432	1037	350	358	2082	3061	47%
N.Hampshire	370	566	642	700	649	931	596	1246	480	585	2937	4028	37%
New Jersey	1559	1971	3051	3154	3264	3426	2722	4682	2305	2719	12901	15952	24%
New Mexico	394	507	751	858	781	848	573	1275	373	397	2872	3885	35%
New York	2543	3372	5432	5711	6524	6808	5107	9594	6383	7098	25989	32583	25%
N. Carolina	932	1398	2245	2646	2504	2845	1880	4614	1465	1912	9026	13415	49%
North Dakota	88	128	215	235	375	373	158	388	273	258	1109	1382	25%
Ohio	1913	2720	4386	4815	5187	5513	5417	9861	3904	4249	20807	27158	31%
Oklahoma	503	772	1311	1433	1292	1440	1246	2633	952	1125	5304	7403	40%
Oregon	736	1043	1704	2011	2243	2532	1565	3215	1521	1642	7769	10443	34%
Penn.	1840	2626	3907	4292	4734	5010	3505	6571	3545	3747	17531	22246	27%
Rhode Island	186	275	306	337	490	517	394	713	331	415	1707	2257	32%
S. Carolina	392	570	874	1015	1162	1273	764	1725	589	689	3781	5272	39%
South Dakota	106	146	293	316	348	369	178	351	198	184	1123	1366	22%
Tennessee	803	1201	1887	2208	1890	2153	1982	4135	1343	1536	7905	11233	42%
Texas	2787	3952	6214	7030	6805	7497	5766	11758	4041	4471	25613	34708	36%
Utah	266	399	633	729	586	687	798	2212	623	781	2906	4808	65%
Vermont	149	210	257	298	346	399	192	533	199	226	1143	1666	46%
Virginia	1217	1752	2478	2853	2730	3022	1861	4296	1726	2050	10012	13973	40%
Washington	1285	1957	3034	3506	3695	4274	2819	6421	2730	3158	13563	19316	42%
West Virginia	257	447	604	687	786	891	589	1683	880	911	3116	4619	48%
Wisconsin	676	960	1580	1746	2068	2144	1229	2661	1255	1324	6808	8835	30%
Wyoming	110	152	183	215	266	284	183	438	230	228	972	1317	35%
Guam	21	40	35	42	29	48	34	80	165	171	284	381	34%
Puerto Rico	178	234	440	515	514	656	1482	2229	2679	4152	5293	7786	47%
Virgin Islands	19	38	43	51	52	78	33	93	48	44	195	304	56%
Other	7	45	11	40	14	42	2	123	12	48	46	298	***
<b>Total:</b>	<b>43608</b>	<b>60986</b>	<b>98383</b>	<b>109769</b>	<b>114396</b>	<b>124924</b>	<b>92618</b>	<b>189721</b>	<b>82296</b>	<b>98950</b>	<b>431301</b>	<b>584350</b>	<b>35.5%</b>
% of Total	10.1%	10.4%	22.8%	18.8%	26.5%	21.4%	21.5%	32.5%	19.1%	16.9%	100%	100%	
% Increase	<b>+39.9%</b>		<b>+9.5%</b>		<b>+9.2%</b>		<b>+104.8%</b>		<b>+20.2%</b>		<b>+35.5%</b>		

(\*\*\* = Other includes U.S. possessions and in 1992, APO/FPO addresses. Figures not comparable.)



# W5YI REPORT

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● *The Mid-America Coordination Council (MACC) has added three new states to their list;* Wyoming, Montana and U.P. (Upper Peninsula) Michigan. The Council now coordinates amateur radio frequencies in 18 states: Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, U.P. Michigan, Minnesota, Missouri, Montana, North Dakota, Nebraska, Ohio, Oklahoma, South Dakota, Western Washington, Wisconsin and Wyoming.

● Rich Ensign, N8IWJ, advises that *the globe circling EARTHWINDS balloon is once again ready for launch* with a new anchor balloon on site at the Reno Stead Airport in Nevada. The launch team has decided not to house the anchor balloon in a new inflatable dome and will go with "Plan B" which is an open air launch. Lift-off is currently on hold waiting for the right weather conditions.

You will remember that Project EARTHWINDS suffered a major setback a couple of months ago when the inflatable dome housing the 140-ft. balloon ruptured prematurely releasing the balloon into the desert which also ripped open and deflated.

EARTHWINDS seeks to circle the globe at an altitude of 35,000 feet with a crew of three. Pilot **Larry Newman, KB7JGM** (Novice) of Scottsdale, AZ, will carry a 10-meter digitized voice telemetry beacon in the gondola with him. When used in conjunction with the global positioning system (GPS) the beacon will read out its latitude, longitude and speed in knots in the Novice voice subband at 28.303 MHz every half hour.

We also understand that short-wave reports will be given three times an hour on 3347, 13993, 14663 and 20994 MHz ...all MARS frequencies. And supposedly the EARTHWINDS send-off is to be carried live by ESPN and CNN.

● *The North Texas Balloon Project* was scrubbed for the second time on Jan. 9th due to bad weather. 2-meter telemetry was to have been broadcast on 144.290 MHz and on 10 meters at 28.322 MHz.

● *The AMSAT/SAREX crowd has agreed to cooperate with HF DXers* during the **ARRL International DX Contest** scheduled for March 6 and 7. DXers were extremely concerned (to put it mildly!) that if the STS-55 shuttle mission slips a few days, that its Packet-Cluster frequencies would be bombarded by interference from amateurs trying to contact the astronauts on the regular SAREX 2-meter uplink voice frequencies. This could destroy their ability to report spotting of rare countries/stations to other DX enthusiasts.

The DXers maintained that they had "squatters rights" since they used 144.95 MHz first for DX spotting. AMSAT pointed out, however, that there are only a very limited number of crystal controlled frequencies available in the Motorola 2-M hand-held transceiver approved for use aboard the shuttle.

Ordinarily five uplink frequencies are used by SAREX when the space shuttle is over North America. These are 144.91, 144.93, 144.95, 144.97 and 144.99. The astronauts work split-frequency and downlink on 145.55 MHz. (Over Europe, SAREX listens on 144.70, 144.75 and 144.80 MHz.)

It has now been agreed by ARRL, AMSAT and SAREX that the astronauts will suspend operations on all of the regular North American uplink (earth-to-astronaut) voice frequencies if STS-55 is delayed to the point where the mission will overlap the **ARRL International DX Contest**. Instead of listening on 144.91 through 144.97 MHz, the astronauts will monitor only 144.47 and 144.49 MHz. (144.49 is ordinarily used as the

SAREX uplink packet frequency.)

There seems to be a difference of opinion as to when the STS-55 mission is scheduled to begin. Three dates have been published! The *ARRL Letter* of Dec. 24th reports STS-55 will launch March 25. *W1AW Space Bulletin* 001 dated Jan. 4th (and our Johnson Space Center VE team) mention a Feb. 25th STS-55 lift-off.

NASA's press kit (which arrived on Friday, Jan. 8th) indicates a launch date/time of Feb. 18th, 1993 at 9:10 a.m. Central Time with return to Kennedy Space Center on Feb. 27 at 7:12 a.m. Central.

● The ARRL now has new **Smith Chart simulation software** available. Written by **Wes Hayward, W7ZOI**, **MicroSmith V2.00** is a tool for designing matching networks with fixed or variable L-C components, stubmatching sections with transmission lines, etc. It's all done graphically on an IBM compatible PC screen. Cost is \$39.00 from ARRL, 225 Main St., Newington, CT 06111. (Add \$3.00 for shipping/handling.)

● **Amateur Radio Engineering** (Tel. 206/882-2837) of Redmond, WA has introduced a telephone interface that allows you to *control your Icom, Yaesu or Kenwood transceiver from a Touch-Tone phone* anywhere in the world. Now you can monitor the DX frequencies and work all of the rare ones from your office! A secret access code prevents unwanted people from accessing your equipment.

**HamLink** goes between the telephone line and the serial computer port of your transceiver. **HamLink** can control the frequency of a radio, mode, scan memories and operate in the split-mode. It even has a synthesized voice to announce frequency and mode. You can 206/880-6050 to test **HamLink** yourself. List price: \$269.00.



## Telecommunications Technology Update!

- Efforts are under way to decide on a standard for ultra-fast modems. Standards for 300- and 1200-baud modems are several years old. But speeds of 19,200 baud and beyond won't have a common communication protocol for at least another year.

What has been agreed upon so far by standards committees is that the new format will use single-carrier modulation for data rates from 9600 to 24000 baud (and in between). What still must be hammered out is the startup handshake sequence and the modulation scheme, among others.

- The FCC has approved a TV ghost-canceling system. Philips uses line 19 of a TV's vertical blanking interval to include a signal reference. Specially-equipped receivers respond to that reference and cancel out ghosts that normally appear to passing aircraft and nearby buildings.

The current chipset is intended for use within the cable industry, so cable companies can reduce signal loss in master transmissions they receive over the air. A consumer version is expected in TV sets within a few years.

- When you open up a VHF radio, you may see what looks like a rubber gasket around the perimeter of the inside of the case. While it does help keep out dirt, the gasket serves a far more important purpose: RF shielding. The silicone-based gasket is coated with a conductive elastomer to keep RF in and out of the radio. One common model boasts better than 70 dB of shielding effectiveness from 30 MHz to 1 GHz. This special type of gasket isn't available at the corner hardware store, so be careful when you take apart your rig.

- With color photographs, the closer you look, the greater detail you can see. This does not hold true with color monitors. Beyond a certain distance, no more detail can

be resolved. The highest-resolution color CRT available today is made by Sony and is used by FAA air traffic controllers. Measuring 20" by 20", it resolves 2000 rows and 2000 columns.

- Quiz: what chemical elements are used to generate colors for phosphors in an average CRT? Answer: silver (blue), terbium (green), and europium (red).

- If you transmit from a handie-talkie with the antenna too close to your computer monitor, you may see the picture jump as the push-to-talk switch is opened and closed. This is because antennas generate electromagnetic fields, and such fields can interfere with the electromagnetic deflection of the electron beam within the CRT (if it's close enough).

Magnetic attenuation inside CRTs within the home is not common because it increases the cost. But it is very common in monitors used in high-power commercial transmitters because of the high levels of RF in the ambient environment. Shielding is usually applied around the inside of the case. Many companies offer foils, meshes, and metal screens in rolls to mask out external electromagnetic fields.

- You may be hesitant to buy used software, and not just because it may have "bugs" in it. Because the original owner's name is still on file with the manufacturer (remember, he sent in the warranty registration card), any difficulties you may have with the program will be just that: yours. If you didn't buy the software, the manufacturer won't help you. Fortunately there's a solution. WordPerfect Corp. offers a service by which the original owner and new owner agree, with the manufacturer's consent, to simply change ownership of the software. After that, it's just as if the new owner bought it originally. It's just like transferring the title of a

car. Other software companies offer similar services.

- Fluorescent lamps are very energy-efficient, low-temperature devices. People enjoy replacing incandescent bulbs with them. But what do you do with fluorescent bulbs after they burn out? They contain mercury vapor and other hazardous chemicals. And there are millions of bulbs all over the world. While the Environmental Protection Agency has not yet called the bulbs hazardous waste, they could in the future. That could seriously affect what individual states could or could not do.

One option is tube reclamation. A few companies take disposed bulbs and prepare them for proper disposal by removing the endcaps, recycling the metal hardware and glass, and send the mercury out for proper disposal.

- Extremely powerful magnets are made from the element neodymium. While it's a rare-earth metal, it produces magnets four times stronger than conventional ones. These magnets are responsible for microphones being built smaller and smaller over the years, because a smaller size can still produce a strong signal. In addition, the extra-strong magnetic field keeps the voice coil from popping out of its mounting as the result of a loud noise.

- The FCC continues to crack down on personal computer makers who violate their Class B certification requirements. The Commission is also considering extending its certification process to individual computer components - such as motherboards, power supplies and such - rather than to just configured systems. About 250 vendors were each fined \$7,000 in 1992 ...up from \$2000 in 1991! It is legal to sell uncertified PC components to assemblers and manufacturers, but not to the public. Fake certification stickers are also a problem.



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● As mentioned in our last issue, President Bush recently signed legislation which would **block the sale of any radio equipment used to eavesdrop on cellular telephone calls between 870 and 894 MHz.**

The new law requires the Federal Communications Commission to deny equipment approval to any scanner capable of receiving - or being readily modified to receive - cellular telephone calls.

The FCC's *Office of Engineering and Technology* has now issued a NPRM as directed by the new law. The actual text of the *Notice of Proposed Rule Making* is not yet available, but here is the press release issued by the Commission last week:

## **FCC PROPOSES PROHIBITING MARKETING RADIO SCANNERS CAPABLE OF INTERCEPTING CELLULAR PHONE CONVERSATIONS - ET Docket 93-1**

The Commission has proposed to amend parts 2 and 15 of its rules to prohibit the manufacture or importation of radio scanners capable of receiving or being altered to receive frequencies allocated to the Domestic Public Cellular Radio Telecommunications Service. This action is in response to the *Telephone Disclosure and Dispute Resolution Act (Act)*. The proposed rules are intended to increase the privacy protection of cellular telephone users without unduly restricting legitimate use of scanners.

In accordance with the Act, the FCC proposed rules requiring that scanner receivers be incapable of tuning, or readily being altered to tune, within the bands allocated to the *Domestic Cellular Radio Telecommunications Service*. The proposed rules would also prohibit frequency converters used in conjunction with scanners that receive, or can be easily modified to receive, cellular transmissions and require that scanners be incapable of converting digital cellular transmissions to voice audio.

The Commission's experience with current scanning equipment indicates that such equipment can often easily and simply be altered to receive cellular frequencies. The FCC also observed potential for such alterations during the equipment evaluation process. To assist the staff in this task, the FCC proposes to require that applicants for authorization of scanning equipment and associated frequency converters providing a statement confirming that the device cannot be readily altered to receive the cellular bands.

Application examiners will be advised to pay particular attention to certain types of units or features that may be indicative of the potential for such alterations (i.e. scanners that tune frequencies around 800 MHz, use certain microprocessor chips, etc.).

*Action by the Commission, Jan. 4, 1993, by Notice of Proposed Rule Making (FCC 93-1). Chairman Sikes, Commissioner Quello, Marshall, Barrett and Duggan.*

## **RADIO CLUB OF AMERICA ANNOUNCES TUITION ASSISTANCE FINANCIAL AID GRANTS TO STUDENTS**

Jan. 1, 1993. The Radio Club of America, Inc., announced today that it has awarded several financial assistance grants to young students pursuing their electronics college education at the under graduate level. The organization is the "World's First Radio Communication Society", having been founded 84 years ago in 1909. The Radio club has over 1,000 professional electronics industry members world-wide at the present time,

**Kenneth M. Miller, K6IR**, of Rockville, Maryland, a member of the Board of Directors and Chairman of the club's Grants-In-Aid Committee stated that 1993 grants total \$11,550. These scholarship grants have been awarded in the amounts of \$500 to \$1,050 each. The majority of the students are licensed amateur radio operators who are pursuing an education in the electronics industry at the college level and who have a need to receive financial aid to help in paying for tuition and related text books.

The source of funds for this program are contributions made to this program by many of the club's members who have enjoyed a successful professional career in the electronics industry and who wish to contribute funds to assist the newcomers to the industry.

The financial interest earned on the investment of over \$100,000 contributed by members provides an on-going source of funds for this program which has been in place for over a decade.

The Grants-in-Aid program is the majority activity of the club and has received worldwide acclaim for the role it plays in assisting the young student to achieve the successful completion of an academic program.

## **HAMVENTION ACCEPTING AWARDS NOMINATIONS**

All amateurs are eligible for nomination to the Dayton HamVention's three major awards. The ***Amateur of the Year*** is for that special person who has made a long term commitment to furthering the amateur radio hobby. The ***Special Achievement Award*** is given to a respected amateur who has spearheaded a single significant amateur radio project. The ***Technical Excellence Award*** goes to the person who has made an outstanding technological break through in the field of amateur radio.

Although nomination forms are available, they are not necessary. Merely give the name of the nominee, call sign, address and telephone number and tell how you feel your nominee has contributed to ham radio.

Any other pertinent details you can supply about the individual is also requested. Deadline is March 15.

Send nominations to: **HamVention Awards Chairman, Box 964, Dayton, Ohio 45401-0964.**



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## FRED J. FRIEL, JR., W3FU, SILENT KEY

Dr. Fred J. Friel, Jr., radio scientist and noted amateur radio operator, died of kidney failure on Dec. 24, in North Arundel Hospital in Glen Burnie, MD. He was 80. Mr. Friel, who lived in Linthicum, MD, was born in Lexington, KY. He graduated from the University of Kentucky in 1934 with degrees in Electrical and Mechanical Engineering. Friel also attended VPI, MIT, and Oxford, and he received an honorary D.Sc degree from RCA Institutes. He taught electrical engineering at VPI and the University of Virginia. Fred got his start in radio as a ham operator, first licensed at age 16.

In 1934-40, he was a radio engineer with RCA working with many of the early radio and television pioneers in developing broadcasting and communications receivers and transmitters. Dr. Friel worked for the Navy in 1940-54 as Chief Engineer of the Radar Laboratory; and Engineer-in-Charge of Instrumentation Engineering for atomic weapon experiments in the Pacific during 1945-54.

Dr. Friel worked in aerospace in the early days of America's space program when he was the Coordinator of Field Operations on Project Vanguard for the *Naval Research Laboratory*, and later for the *National Aeronautics and Space Administration* when NASA was created. His most notable professional achievements were negotiating, at the prime minister level, the establishment of the United States tracking stations in Peru, Ecuador, Chile, and Nigeria. For his work in Peru, the President of Peru awarded Dr. Friel the Aeronautical Medal of Merit in 1959.

In 1971-75, Dr. Friel was a radio frequency Spectrum Manager with NASA where he was the NASA representative in the Frequency Assignment Subcommittee and the Technical Subcommittee of the *Interdepartment Radio Advisory Committee* (IRAC) advising the Executive Office of the *President's Office of Telecommunications Policy*.

During his NASA tenure, he was a United States delegate to international conferences of the space research and communications satellite committees of the C.C.I.R. (*International Radio Consultative Committee*), the technical advisory body of the United Nations' *International Telecommunications Union*.

Dr. Friel was a Registered Professional Engineer in Virginia and a Life Senior Member of the *Institute of Electrical and Electronic Engineers* (IEEE), and its predecessor organizations for 62 years.

He was an active radio amateur operator for nearly 65 years, first licensed with the call sign 9EKM in 1928 and later W9ACN, both in Kentucky. Following World War II, he operated as W4KRR in Portsmouth, VA. He later moved to Washington, D.C. and Maryland operating as K3CYA and subsequently, W3FU. Fred specialized in CW and DX and was known throughout the world for his excellent CW fist and by his W3FU call sign. He held special event call signs KZ3ITU and WX3ITU ...and a number of foreign call signs including XQ8AG, 5N2ACB, and CE3AGI.

In his radio amateur research, Dr. Friel specialized in electromagnetics, antennas, and ionospheric physics. He was a life member of the International Amateur Radio Club (Geneva, Switzerland), the American Radio Relay League, the Canadian Amateur Radio Federation, the Potomac Valley Radio Club, the Quarter Century Wireless Association, and the Society of Wireless Pioneers. He was a generous benefactor of various amateur causes.

He was a key participant in the amateur radio preparations for the 1979 *World Administrative Radio Conference* (WARC-79), and was chairman of the Policy and Definitions Subcommittee of the *Advisory Committee for Amateur Radio* (ACAR), the FCC's U.S. preparatory group for the ITU's WARC-79 radio treaty conference.

Dr. Friel worked behind the scenes and was instrumental in establishing the *C.C.I.R Working Group on the Amateur Service*. He was a member of the Subcommittee that developed the technical justifications for the amateur need for the new 10, 18, and 24 MHz bands. It was Dr. Friel's data and technical report that provided the very important and necessary technical evidence for the WARC-79 to allocate the three new bands to the Amateur Service. He was very modest and never took credit for this work, even when others stepped forward to take the credit.

For the past 10 years, he worked to improve the ARRL by reforming the presidential selection process; downsizing its board of directors; and eliminating its Washington lobbying activities. In particular, he advocated election of the ARRL president by the general membership, and changing the presidential nomination processes following that of the IEEE which had three different ways for a candidate to be nominated. Mr. Friel believed that providing for several presidential candidates and the associated competition would create robust debates questioning the old policies and producing new and better policies resulting in a much healthier and effective ARRL.

Mr. Friel concluded that the ARRL Board of Directors was much too large, and ineffective because of its size. He supported a much smaller and more dynamic Board more responsive to the membership.

Regarding the ARRL's Washington activities, Mr. Friel believed that the League wasted millions of its members' dollars in an exercise in futility. Furthermore, Mr. Friel considered the ARRL's shift to "hard ball" lobbying tactics to be counterproductive with amateur radio losing many of its good friends and instead, making many enemies.

Although no surviving relatives are known, Dr. Friel had many good friends throughout the world that he met through his travels, professional activities, and especially amateur radio. The Jan. 2nd *Baltimore Sun* carried an extensive (four-columns!) "Fred J. Friel, Jr., Pioneer in Radio engineering" obituary complete with his photograph and radio accomplishments. A memorial service was held on Jan. 11 at St. Mary's Catholic Church in Annapolis. W3FU dead at age 80.